Augmented renal clearance of vancomycin in suspected sepsis: single-center, retrospective pediatric cohort

Study Question
What associations exist between augmented renal clearance in pediatric patients treated for suspected sepsis and vancomycin pharmacokinetics?

Of the 73 patients treated for sepsis, 32 (44%) had augmented renal clearance. Children with ARC were older (0.3 vs 1.5, p = 0.001), weighed more (5.0 vs 10.5, p < 0.001), and had a greater body surface area (0.28 vs 0.48, p < 0.001).

Augmented renal clearance was negatively associated with presence of cardiac comorbidities. OR: 0.18 (95% CI 0.07-0.50, p = 0.001).

Neither race nor gender was associated with augmented renal clearance in this patient population.

Children with augmented renal clearance had higher odds of subtherapeutic vancomycin trough levels. OR: 2.8 (95% CI 1.1-7.0, p < 0.03)

Study Design & Measures

Study Population:
Hospitalized children (0-18 years) initiated on empiric vancomycin therapy for suspected sepsis.

Study Groups:
Patients were divided into two groups based on presence of augmented renal clearance defined as estimated glomerular filtration rate [eGFR] above 130 mL/min/1.73m2.

Study Location:
Tertiary children’s hospital in Texas, USA.

Study Outcome:
Initial vancomycin trough levels (VTL).

Conclusion and Authors’ Next Steps
Sub-therapeutic VTL is associated with ARC in this single-center, retrospective cohort of children with suspected sepsis.

This problem may present a potential risk of treatment failure in gram positive sepsis or longer time to clinical response.